Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

622
2R312
2

LIBRARY
CURRENT SERIAL RECORD
AUG 1 - 1960
U.S. DEPARTMENT OF AGRICULTURE

Research Note
UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
INTERMOUNTAIN FOREST & RANGE EXPERIMENT STATION
OGDEN UTAH

No. 74 May 1960

DWARFMISTLETOE SURVEY IN KANIKSU NATIONAL FOREST

Donald P. Graham
Division of Forest Disease Research

METHOD

A roadside survey to determine distribution and abundance of dwarfmistletoe (Arceuthobium spp.) in the Kaniksu National Forest was completed in 1959. The survey included all ranger districts except the Noxon and Trout Creek Districts and included intermingled and adjacent alienated lands. The location and degree of dwarfmistletoe infection were recorded along a portion of the roads. The roads were traveled at about 10 miles per hour with frequent stops to examine the stands. As many roads as possible were traveled in the time available.

Continuous observations were made on all tree species for dwarfmistletoe infection, but detailed information was recorded only for western larch and lodgepole pine. Whenever dwarfmistletoe was encountered in Douglas-fir, the approximate location and extent of the infected area were recorded (fig. 1).

During travel through stands containing 10 percent or more of either western larch or lodgepole pine, the degree of dwarfmistletoe infection was recorded as:

Free - Stand free of dwarfmistletoe.
Light - Less than one-third of the trees infected.
Moderate - One-third to two-thirds of the trees infected.
Heavy - More than two-thirds of the trees infected.

In addition to dwarfmistletoe infection, stand timber type, size class, and stocking class were recorded. The definitions and specifications used for these stand conditions were the same as those used by the forest inventory survey.[1]

---

[1] Field instruction manual for forest inventory. Division of Forest Economics, Forest Survey, Ogden, Utah. Revised 1958.

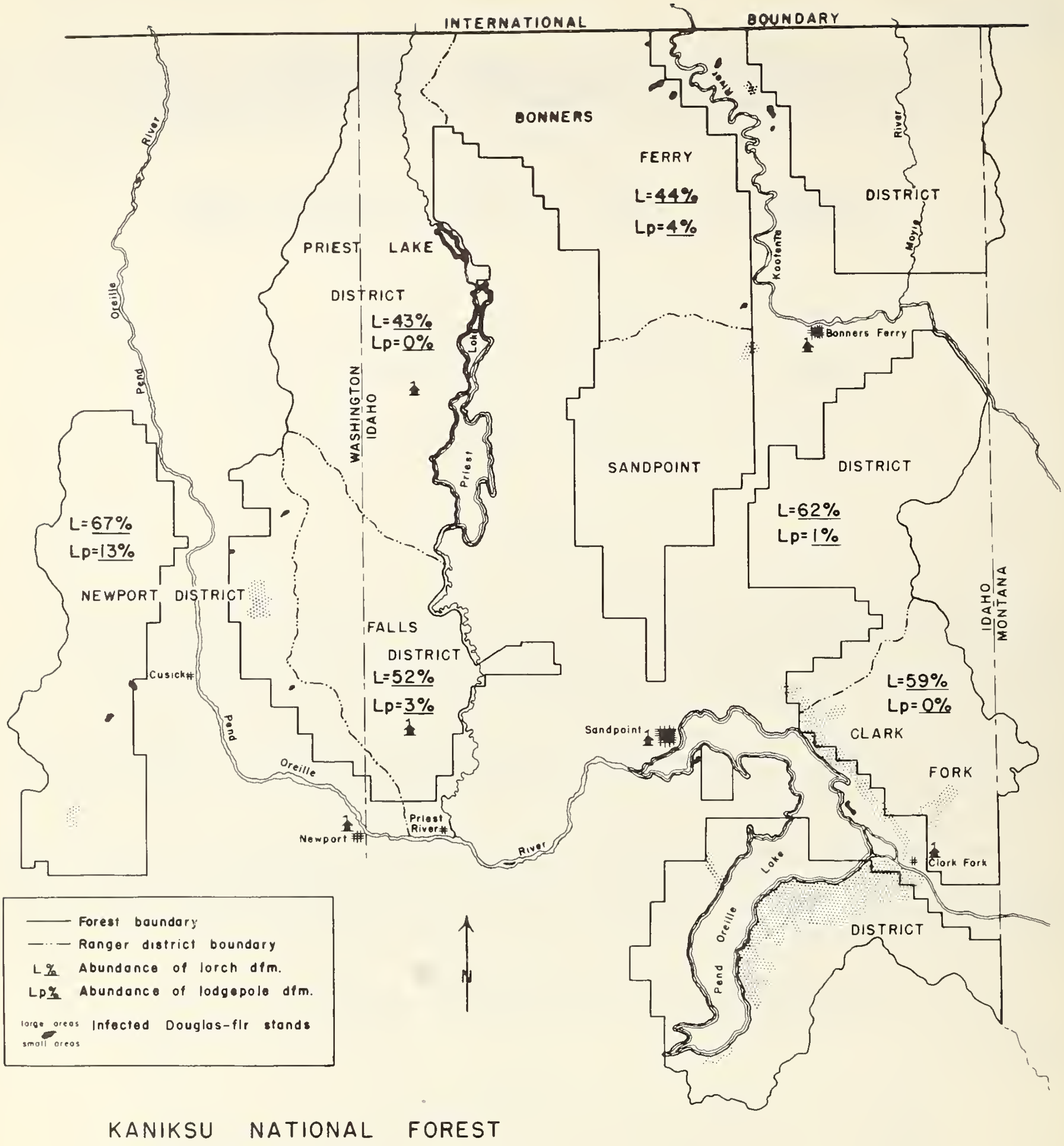

Figure 1.--Abundance of western larch (L) and lodgepole pine (Lp) dwarfmistletoes and location of infected Douglas-fir stands in the Kaniksu National Forest as determined from roadside survey.

Dwarfmistletoe and stand conditions were observed on a continuous strip one or one-half chain wide, depending on stand density, along the right-hand side of the road. Odometer readings were taken and distances recorded to the nearest one-tenth mile whenever a change occurred in type of stand or in degree of infection.

RESULTS AND DISCUSSION

Dwarfmistletoe in Western Larch

Results of the survey clearly indicate that western larch dwarfmistletoe is a major problem in many stands. A total of 300.3 miles of roadside strip was traveled in western larch stands. Dwarfmistletoe-infected larch was found along 162.5 miles, or in 54 percent of these stands (table 1 and fig. 1). Larch infection was highest in the Newport District and lowest in the Priest Lake and Bonners Ferry Districts. About two-fifths of the infected larch stands on the forest were heavily infected.

Table 1.--Incidence of dwarfmistletoe in western larch and lodgepole pine stands in Kaniksu National Forest, including intermingled and adjacent alienated lands, 1959

Species and ranger district	Miles of roadside strip	Percentage of roadside miles traveled in:				
		Dwarfmistletoe infected stands				Dwarfmistletoe free stands
		Light	Moderate	Heavy	Total	
Western larch						
Newport	67.4	16	18	33	67	33
Falls	50.4	14	12	26	52	48
Priest Lake	29.9	13	14	16	43	57
Sandpoint	28.0	20	13	29	62	38
Bonners Ferry	87.0	20	11	13	44	56
Clark Fork	37.6	22	14	23	59	41
All districts	300.3	18	14	22	54	46
Lodgepole pine						
Newport	43.2	7	5	1	13	87
Falls	16.0	1	2	0	3	97
Priest Lake	15.8	0	0	0	0	100
Sandpoint	18.9	0	1	0	1	99
Bonners Ferry	47.3	2	2	0	4	96
Clark Fork	11.8	0	0	0	0	100
All districts	153.0	3	2	1	6	94

The frequency of infected larch decreased as stand size class decreased, but infection was appreciable even in seedling-sapling stands (table 2). In larch sawtimber stands, 78 percent of the roadside strip had infection.

Table 2.--Abundance of western larch dwarfmistletoe in various stand size classes and timber types, Kaniksu National Forest, 1959

Stand size class and ranger district	Percentage of total miles of western larch that are infected: In larch timber type	In other timber types	In all timber types
Sawtimber stands			
Newport	91	89	90
Falls	68	67	68
Priest Lake	100	100	100
Sandpoint	81	96	85
Bonners Ferry	75	61	68
Clark Fork	71	82	77
All districts	77	78	78
Pole-sized stands			
Newport	39	58	57
Falls	50	63	54
Priest Lake	46	29	39
Sandpoint	59	32	46
Bonners Ferry	36	48	41
Clark Fork	61	58	59
All districts	46	58	49
Seedling-sapling stands			
Newport	15	0	13
Falls	16	0	12
Priest Lake	30	10	20
Sandpoint	-	-	-
Bonners Ferry	22	0	17
Clark Fork	8	0	4
All districts	20	4	15
All stand size classes			
All districts	51	58	54

Comparable values for pole and seedling-sapling stands were 49 and 15 percent, respectively. This decreasing incidence of dwarfmistletoe occurrence as stand size class decreases is to be expected because the smaller trees are often of a younger age class and, therefore, have been subjected to infection for a shorter time.

Larch dwarfmistletoe was about as common in stands of other timber types as in the western larch timber type. In sawtimber stands this tendency is well illustrated. Infection was 77 percent in the larch sawtimber type and 78 percent in other types (table 2). In pole-sized stands, however, some variation in dwarfmistletoe incidence occurred between timber types and among ranger districts. This variation is probably the result of the past history of individual pole stands. Nevertheless, the survey data indicate that infected larch poles occur about as frequently in mixed stands as in larch stands. In seedling-sapling stands, infection was highest in the larch type. However, this may not be a valid comparison. Only 11.5 miles of other timber types were sampled.

The frequency of larch dwarfmistletoe in well- and medium-stocked stands (59 and 56 percent, respectively) was greater than in poorly stocked stands (42 percent). However, infection in poorly stocked stands tended to be heavier than in well- and medium-stocked stands (table 3).

Table 3.--Frequency of total infection and heavy infection by the western larch dwarfmistletoe by stand stocking classes, Kaniksu National Forest, 1959

Stand stocking class	Total miles traveled in infected larch		Miles of heavily infected larch	
	Basis	Infection	Basis	Infection
	Miles	Percent	Miles	Percent
Well stocked	110.7	59	65.2	38
Medium stocked	131.3	56	73.1	42
Poorly stocked	58.3	42	24.2	51
All stockings	300.3	54	162.5	42

Dwarfmistletoe in Lodgepole Pine

Lodgepole pine dwarfmistletoe is not a problem in the forest except in occasional stands. Infection occurred in only 6 percent of the 153.0 miles of roadside strip traveled in lodgepole pine stands. No infected lodgepole was found in either the Priest Lake or Clark Fork Districts (table 1 and fig. 1). The highest incidence of the lodgepole pine dwarfmistletoe (13 percent) occurred in the Newport District.

Stand incidence of the lodgepole pine dwarfmistletoe was approximately the same regardless of timber type. Five percent of the roadside strip traveled in the lodgepole pine timber type was infected, 7 percent of the mixed stands, and 6 percent of all stands.

Dwarfmistletoe in Douglas-fir

Although no detailed records were taken on the abundance and intensity of the Douglas-fir dwarfmistletoe, infection in the species is present on the forest. Several infected areas of varied sizes were encountered (fig. 1). Infection of Douglas-fir is especially severe on the east side of Pend Oreille Lake. Several infected stands occur in the northern half of the Purcell Trench and along the Pend Oreille River north of Newport. No infected Douglas-fir was found in the Priest River drainage.

SUMMARY

Estimates of the distribution and abundance of dwarfmistletoe in the Kaniksu National Forest were obtained by a roadside survey in 1959. Larch dwarfmistletoe was found along 54 percent of the 300.3 miles of roadside strip traversed in stands containing 10 percent or more of western larch. The comparable value for lodgepole pine was 6 percent of the 153.0 miles of roadside strip traversed.

Larch dwarfmistletoe was more prevalent in sawtimber stands (78 percent) than in pole and seedling-sapling sized stands (49 and 15 percent, respectively).

Poorly stocked larch stands had dwarfmistletoe less frequently but, if infected, were more likely to be heavily infected than medium- or well-stocked stands.

The larch and lodgepole pine dwarfmistletoes were about as common in their respective timber types as in stands of other timber types.

Several infected Douglas-fir stands were found scattered through the forest, particularly along the Purcell Trench from Pend Oreille Lake to the Canadian border. No infected Douglas-fir was found in the Priest Lake drainage.